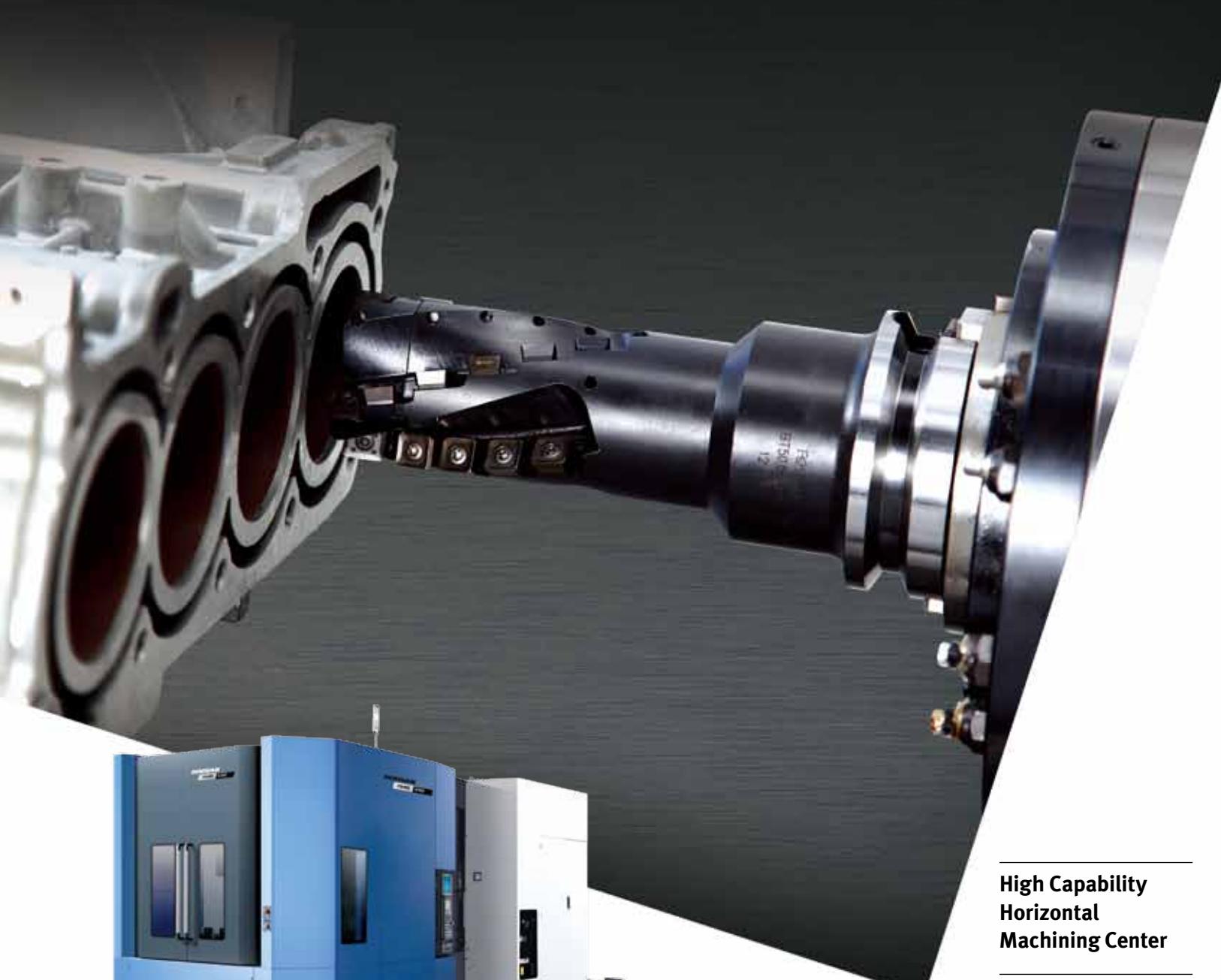


NHM series



**High Capability
Horizontal
Machining Center**

NHM series

NHM 5000
NHM 6300
NHM 8000

Basic Information

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Cutting
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NHM series

NHM Series provides the largest machining specifications and production capabilities in its class including powerful cutting capabilities for satisfying diversified needs for production of customers. The integrated structure of the box-type guideway is the optimal structure of excellent production capabilities for machining various materials from common parts to metal hard of cutting with its high rigidity capacity required for powerful cutting process. In addition, replacement speed of tools and palettes at servo motor driving for keeping non-cutting time minimal improves reliability and productivity.



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26 Customer Support Service

High Rigidity One-Piece Bed

The high rigidity one-piece bed supports heavy duty cutting with the adoption of Finite Element Method (FEM) analysis.

High Productivity and Reliability

The servo-driven automatic tool changer (ATC) and automatic pallet changer improve parts durability and maintainability, leading to improved product quality. Compatibility with the pallet extension system and minimized idle time ensure even higher productivity.

User-Friendly Functions

Various new user-friendly functions have been introduced to reduce the operator's work load



Machine Structure

The machine of one-piece structure of the bed and the column yields high productivity.

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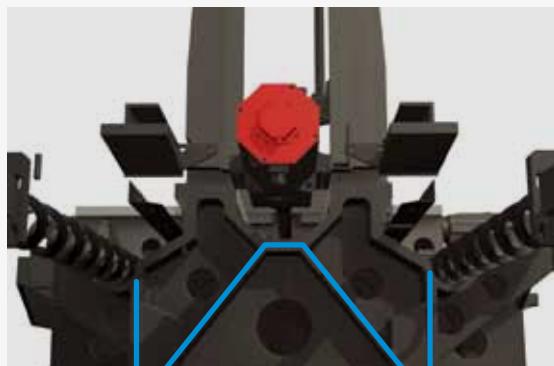
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High Rigidity Bed Structure

NHM Series is designed for keeping high stability and durability intact through FEM technologies; the series ensures continuous powerful cutting power with the structure applied with M- and W-type ribs.



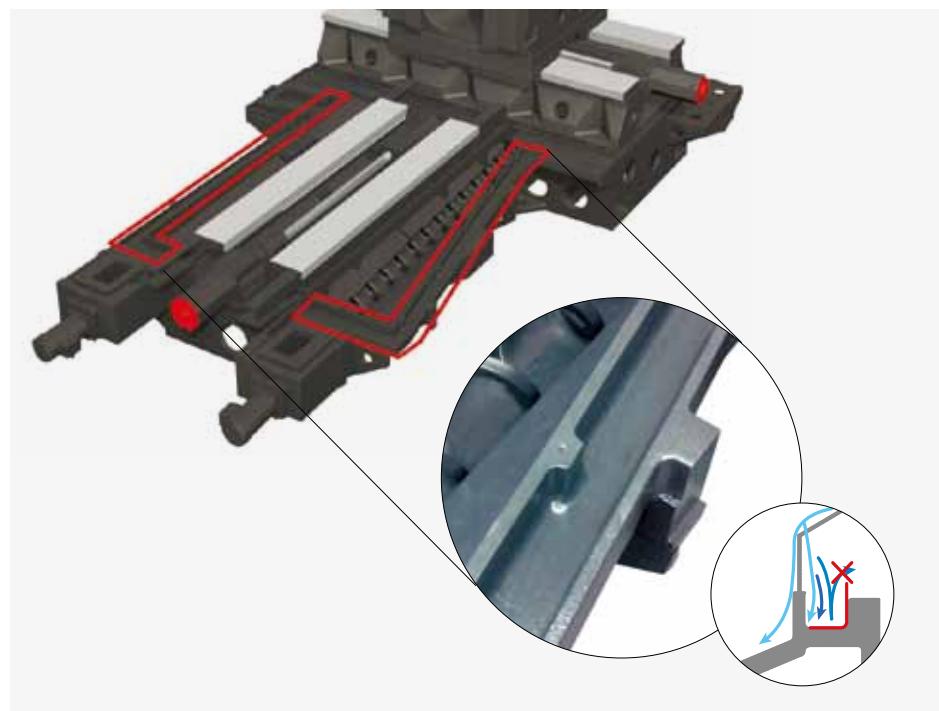
W-type rib



M-type rib

Double-Wall Configuration

The main body of the system is designed in double wall structure for preventing leak of cutting oil: This design allows easy maintenance and improves productivity as well.



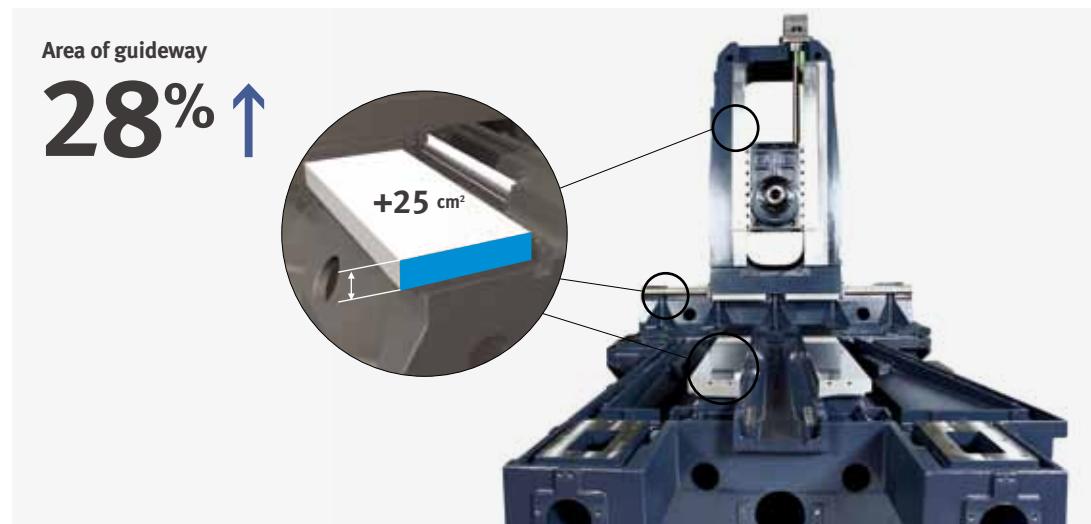


Travel Axis

High rigidity is realized with the wide box-type guideway.

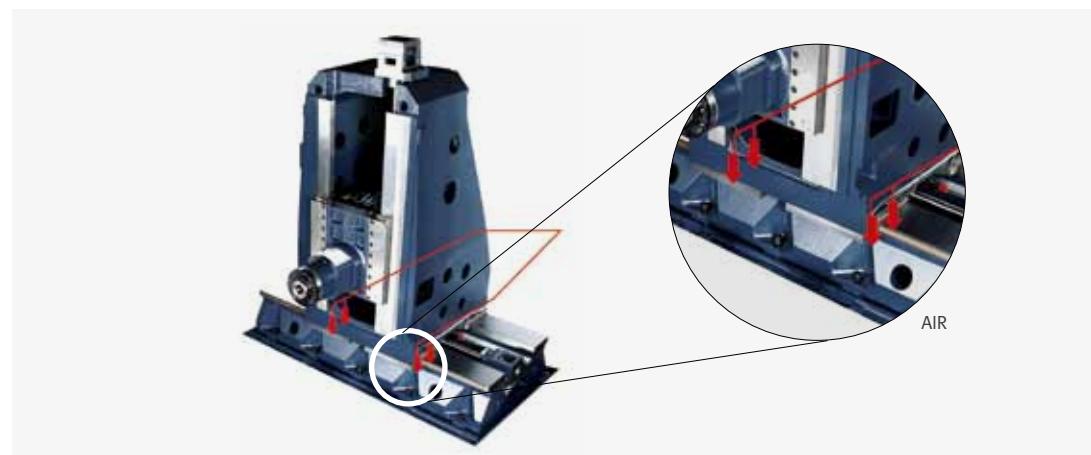
Strong Feed Axis Structure

The extended box-type guideways are applied to all of the axes for providing higher rigidity, and the optimal dynamic rigidity of the main sliding parts further improve capabilities of strong cutting.



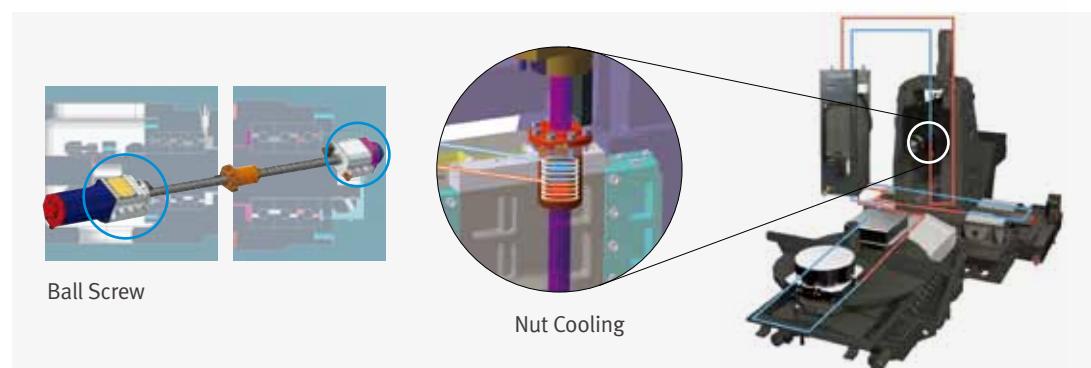
Half-Floating Air Structure of Feed System

The half-floating air structure mitigates friction resistance during feed along the X axis resulted from the mass of the spindle and the column for improving accuracy of positioning and repeatability.



Powerful Ball Screw and Thermal Displacement Control

The 3-row bearing applied with the rigid coupling keeps precision and rigidity for individual axes high, and high accuracy is implemented by controlling thermal displacement by the ball screw locking devices and the nut cooling system on the all of the axes.





Spindle

The high power gear-driven spindle of NHM Series yields excellent rigidity for diverse materials.

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Powerful Spindle

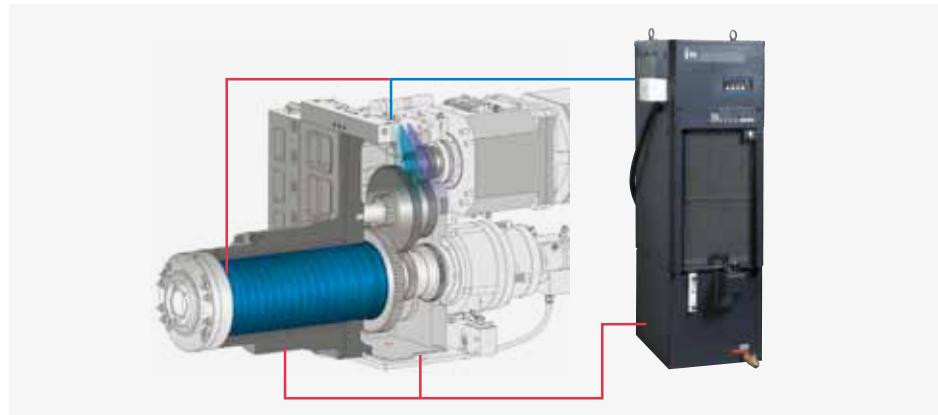
Designed to minimize vibration and thermal error while offering rapid acceleration and deceleration, the spindle guarantees excellent cutting performance from steel to nonferrous metal parts



| Model | Rotation rate r/min | Output kW (Hp) | Torque N·m (ft-lb) | Specification |
|----------|------------------------|-----------------------|-----------------------|---------------|
| NHM 5000 | 6000 | 15 / 25 (20.1 / 33.5) | 1034 (25.8) | ISO #50 |
| NHM 6300 | | 22 / 35 (29.5 / 46.9) | 1732 (1277.5) | |
| NHM 8000 | | | | |

Spindle Cooling System

The spindle temperature is kept uniform by the cooling system. The temperature sensor controls temperature of the jacket surrounding the spindle as well as the temperature of oil circulating about the spindle bearing, the gear and the motor flange for ensuring stable and precise machining.



Dual Contact Tool System

Tool rigidity is enhanced by the firm clamping of the spindle. Tool lifecycle and cut-surface roughness have been improved as a result of the reduced vibration realized by the dual contact spindle.





Automatic Tool Changer

The servo-driven ATC provides high reliability and reduces tool change time.

Servo-driven ATC

The ATC is capable of handling weight from 25kg to 30kg at high speed using a servo motor, and fast tool indexing and spindle positioning.



Cutting Capacity

| Model | Unit | Max. tool diameter x max. tool length | |
|----------|-----------|---------------------------------------|-------------------------|
| | | BT / CT / DIN | HSK |
| NHM 5000 | mm (inch) | 320 x 530 (12.6 x 20.8) | 320 x 600 (12.6 x 23.6) |
| NHM 6300 | mm (inch) | 320 x 630 (12.6 x 24.8) | 320 x 700 (12.6 x 27.6) |
| NHM 8000 | mm (inch) | 320 x 630 (12.6 x 24.8) | 320 x 700 (12.6 x 27.6) |

Tool change time (tool weight of less than 12 kg (26.5 lb))

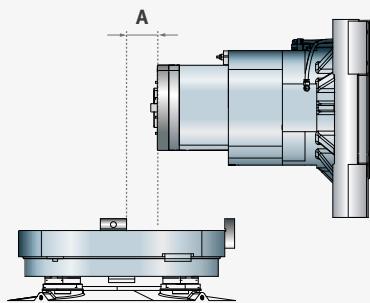
| Model | Unit | Tool to tool | Chip to chip |
|----------|------|--------------|--------------|
| NHM 5000 | s | 2 | 7 |
| NHM 6300 | s | | 7.5 |
| NHM 8000 | s | | 8.5 |

Convenient Short Tool Cutting

The distance between the spindle and the center of the pallet has been reduced for heavier-duty cutting with shorter tools.

Features

- Increased tool rigidity with a larger diameter
- Innovative improvement of ATC repeatability
- Minimal Z axis displacement at high speed
- Increased tool service life



Tool Magazine

60 tools as a standard feature in addition to various options

Tool Magazine for Diverse Types of Tools, including Chain and Matrix Tool Types

The NHM Series provides 60 tools as a standard feature, and up to 376 tools as an option.

Chain type magazine

60ea
standard

90ea

120ea

150ea
option



Matrix type magazine option

196ea

256ea

316ea

376ea





Automatic Pallet Changer (APC)

The servo-driven APC boasts high reliability with its stable, accurate performance and reduced rejection ratio.

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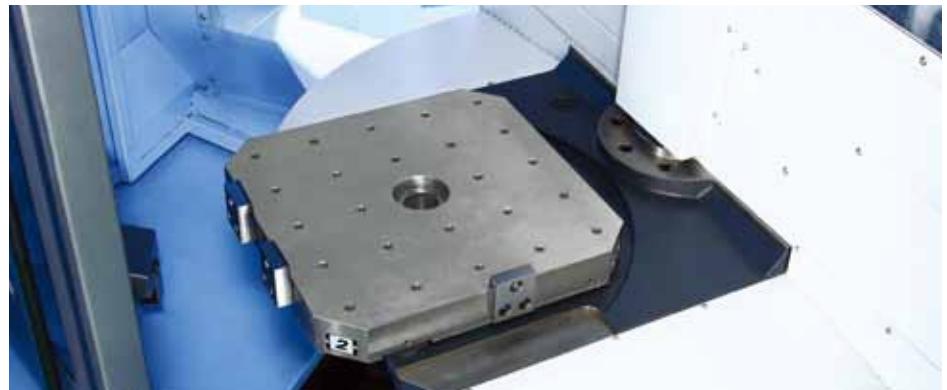
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Improved Pallet and APC System

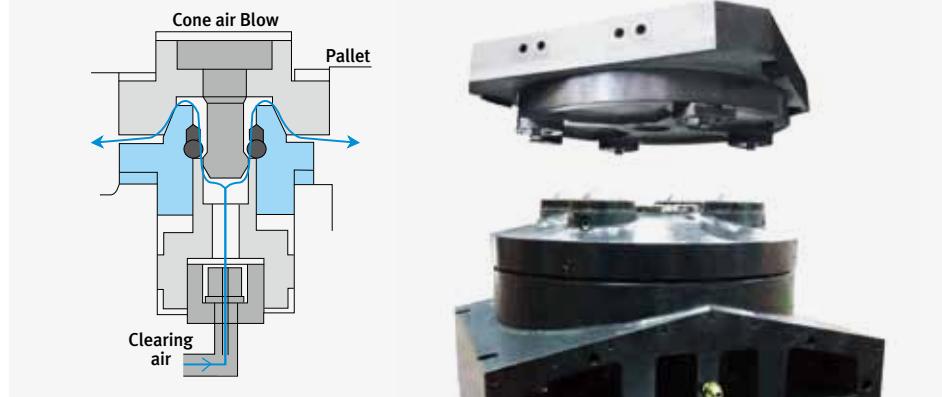
The servo-driven APC system realizes increased productivity with fast and accurate pallet change. In addition to its excellent reliability, the improved APC has more space for the operator's convenience.



| Classification | NHM 5000 | NHM 6300 | NHM 8000 |
|--------------------|----------|----------|----------|
| Pallet change time | 8.5 s | 12 s | 16 s |

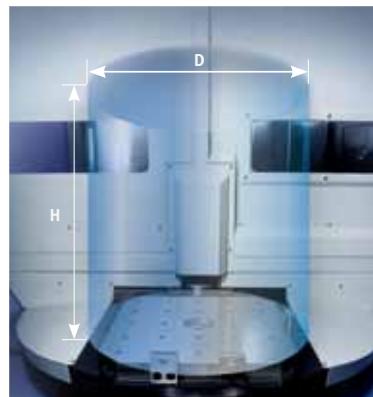
Cone Air Blower

As a mechanism designed for precise pallet position repeatability, the cone air blower injects high-pressure air into the table fixing pin connecting the table and the pallet in order to remove chips from the pin and guaranteeing them seating at the correct positioning of the workpiece.



Max. Workpiece Size

The NHM Series provides more space for heavier and larger workpieces.



| Max. workpiece size (D X H) | | |
|-----------------------------|-----------|-----------------------------|
| NHM 5000 | mm (inch) | Ø 850 x 1100 (33.5 / 43.3) |
| NHM 6300 | mm (inch) | Ø 1050 x 1350 (41.3 / 53.1) |
| NHM 8000 | mm (inch) | Ø 1450 x 1550 (57.1 / 61) |
| Max. workpiece weight (W) | | |
| NHM 5000 | kg (lb) | 800 (1763.7) |
| NHM 6300 | kg (lb) | 1200 (2645.5) |
| NHM 8000 | kg (lb) | 2000 (4409.2) |



Superior Machining Performance

The NHP Series realizes excellent machining performance thanks to its improved structure and comprehensive tooling system.

Higher Cutting Power

High-rigidity machining can be carried out with precision accuracy and diverse functions.

High Productivity

- Component of automobile : Carrier middle
- Material : Cast iron
- No. of tools : 21



Cycle time

Down

10 %

Previous Model

2333 s

NHM series

2110 s

↓
223 s

Cutting Capacity

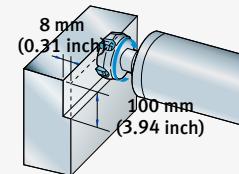
NHM 5000

Motor power : 25 / 15 kW (33.5 / 20.1 Hp)

Face mill Carbon steel (SM45C)

ø125mm (3.94 inch) Face mill (8Z)

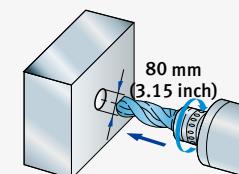
| Machining rate cm ³ /min (in ³ /min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---------------------------------------------------------------|------------------------|--------------------------|
| 740 (452) | 500 | 925 (36.4) |



End mill Carbon steel (SM45C)

ø80mm (3.15 inch) U-Drill (2Z)

| Machining rate cm ³ /min (in ³ /min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---------------------------------------------------------------|------------------------|--------------------------|
| 465 (28.4) | 600 | 92.5 (3.6) |



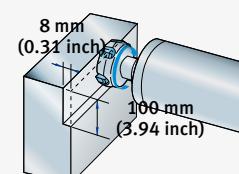
NHM 6300 / 8000

Motor power : 35 / 22 kW (29.5 / 16.9 Hp)

Face mill Carbon steel (SM45C)

ø125mm (4.9 inch) (Face mill (8Z)

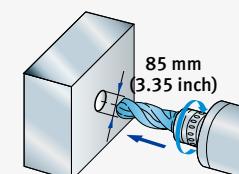
| Machining rate cm ³ /min (in ³ /min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---------------------------------------------------------------|------------------------|--------------------------|
| 1045 (85.7) | 564 | 1759 (69.3) |



End mill Carbon steel (SM45C)

ø85mm (3.35 inch) U-Drill (2Z)

| Machining rate cm ³ /min (in ³ /min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---------------------------------------------------------------|------------------------|--------------------------|
| 767 (46.8) | 674 | 135 (5.3) |



* The results, indicated in this catalogue are provided as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Optional Accessories

Diverse optional devices and features are available to meet specific customer requirements.

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● Standard ○ Optional X N/A

| NO. | Description | Features | NHM 5000 | NHM 6300 | NHM 8000 |
|-----|-----------------------------------------|-------------------------------|--------------------------------------|----------|----------|
| 1 | Tool magazine (No. of tool stations) | 60 ea | ● | ● | ● |
| 2 | | 90 ea | ○ | ○ | ○ |
| 3 | | 120 ea | ○ | ○ | ○ |
| 4 | | 150 ea | ○ | ○ | ○ |
| 5 | | BT50 | ● | ● | ● |
| 6 | | CAT50 | ○ | ○ | ○ |
| 7 | | DIN50 | ○ | ○ | ○ |
| 8 | | HSK A-100 | ○ | ○ | ○ |
| 9 | | Mist collector | ○ | ○ | ○ |
| 10 | Spindle | 6000 r/min | 15 / 25 kW (20.1 / 33.5 Hp) | ● | |
| 11 | | | 22 / 35 kW (29.5 / 46.9 Hp) | | ● |
| 12 | | 8000 r/min | 30 / 37 kW (40.2 / 49.6 Hp) | ○ | |
| 13 | | | | ○ | ○ |
| 14 | Hydraulic fixtures | 2X2 | ○ | ○ | ○ |
| 15 | | 4X4 | ○ | ○ | ○ |
| 16 | | 6X6 | ○ | ○ | ○ |
| 17 | | 8X8 | ○ | ○ | ○ |
| 18 | | Hydraulic fixture unit | ○ | ○ | ○ |
| 19 | Automatic workpiece measurement device | OMP60_RENISHAW | ○ | ○ | ○ |
| 20 | | RMP60_RENISHAW | ○ | ○ | ○ |
| 21 | Auto tool measuring device | BK MIKRO | ○ | ○ | ○ |
| 22 | | NEEDLE SWING TYPE | ○ | ○ | ○ |
| 23 | | OMRON (Limit Switch Type) | ○ | ○ | ○ |
| 24 | | TS27R | ○ | ○ | ○ |
| 25 | | NC 4 | ○ | ○ | ○ |
| 26 | Accuracy | Linear scale (X-axis) | ○ | ○ | ○ |
| 27 | | Linear scale (Y-axis) | ○ | ○ | ○ |
| 28 | | Linear scale (Z-axis) | ○ | ○ | ○ |
| 29 | Chip Handling System | Chip conveyor | HINGED Type | ○ | ○ |
| 30 | | | SCRAPER Type | ○ | ○ |
| 31 | | | DRUM Type | ○ | ○ |
| 32 | | Chip bucket | ○ | ○ | ○ |
| 33 | Coolant | FLOOD | ● | ● | ● |
| 34 | | FLUSHING | ● | ● | ● |
| 35 | | SHOWER | ○ | ○ | ○ |
| 37 | | TSC | 1.5 kW 2.0 MPA (2 Hp 290 psi) | ○ | ○ |
| 38 | | | 3.0 kW 3.0 MPA (4 Hp 435.1 psi) | ○ | ○ |
| 39 | | | 7.5 kW 7.0 MPA (10 Hp 1015.3 psi) | ○ | ○ |
| 40 | | Coolant gun | ○ | ○ | ○ |
| 41 | | Oil skimmer | ● | ● | ● |
| 42 | | MQL System | ○ | ○ | ○ |
| 43 | Table | Index table (1° control) | ● | ● | ● |
| 44 | | Rotary table (0.001° control) | ○ | ○ | ○ |
| 45 | Pallet | Tap pallet | ● | ● | ● |
| 46 | | T-Slot pallet | ○ | ○ | ○ |
| 47 | AIR | Pallet air seat | ○ | ○ | ○ |
| 48 | | AIR GUN | ○ | ○ | ○ |
| 49 | MPG | Portable MPG | ● | ● | ● |

Chip Conveyor option



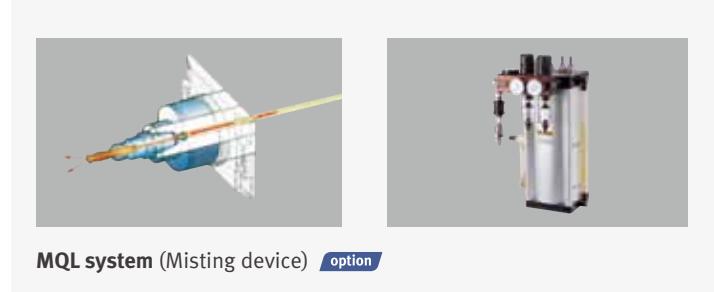
Chip Disposal System



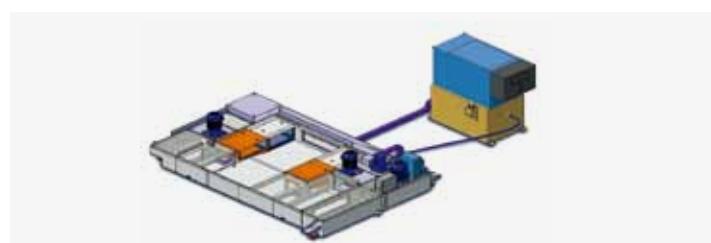
Measurement Systems



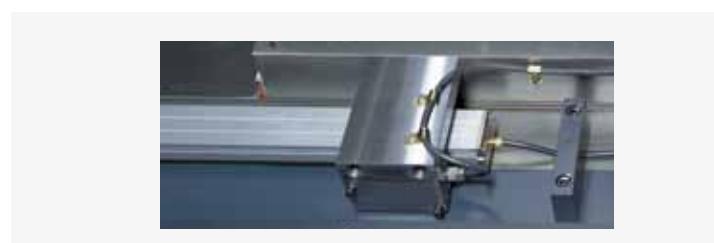
Environment Friendly Devices



Cutting Oil Cooling System option



Linear Scale Feedback System option





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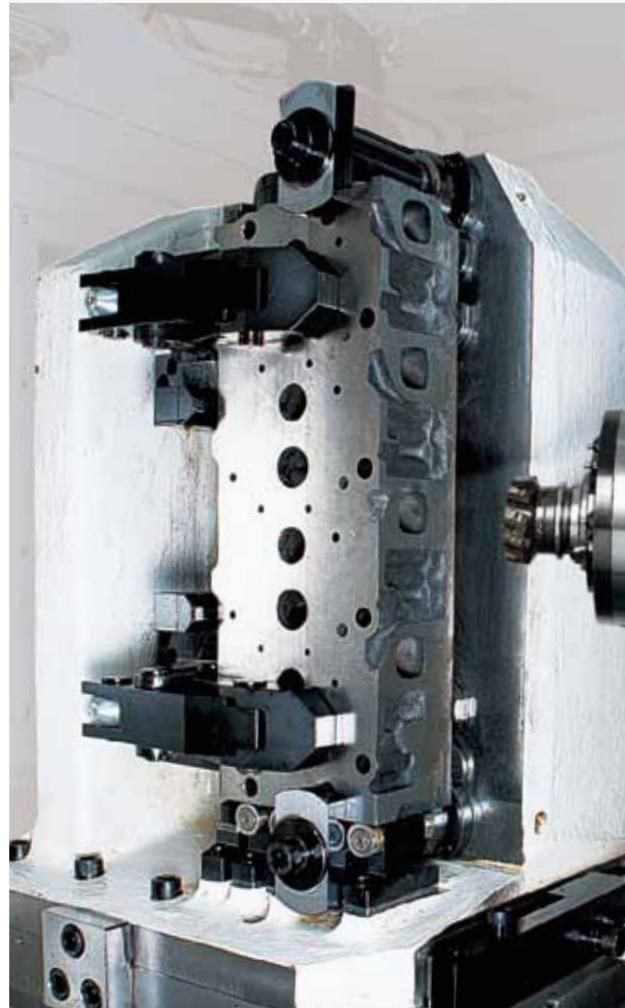
Customer Support Service

We offer a wide range of solutions that can be optimized to suit each customer's needs.

Clamping Fixtures

The following hydraulic and pneumatic fixture options are available for setting up workpieces:

A variety of preparations for workpiece clamping fixtures (hydraulic / pneumatic) option



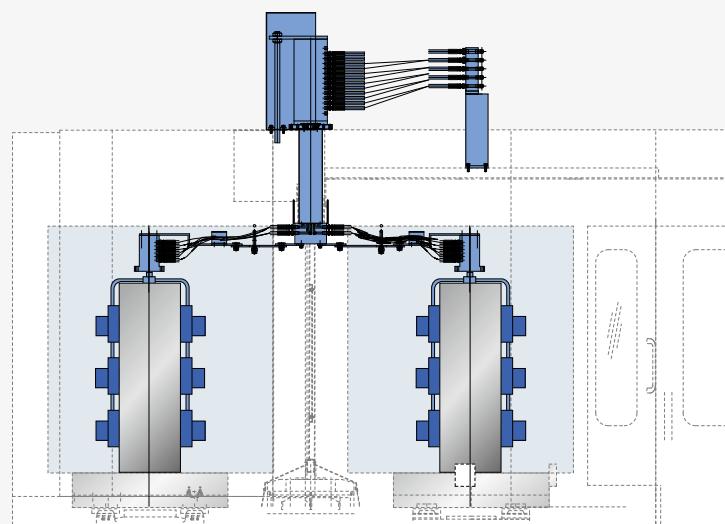
Hydraulic / pneumatic fixture pot

- A/B Line : 2, 4, 6, 8 Pairs (Including solenoid valve)
- P/T Line : 2, 4, 6, 8 Pairs (Excluding solenoid valve)

Clamping fixture hydraulic motor

- 2.2 kW (3.0 Hp) / 7MPa
- 3.7 kW (5.0 Hp) / 15MPa
- 5.5 kW (7.4 Hp) / 21MPa

※ Please provide us with detailed specifications on the order sheet.





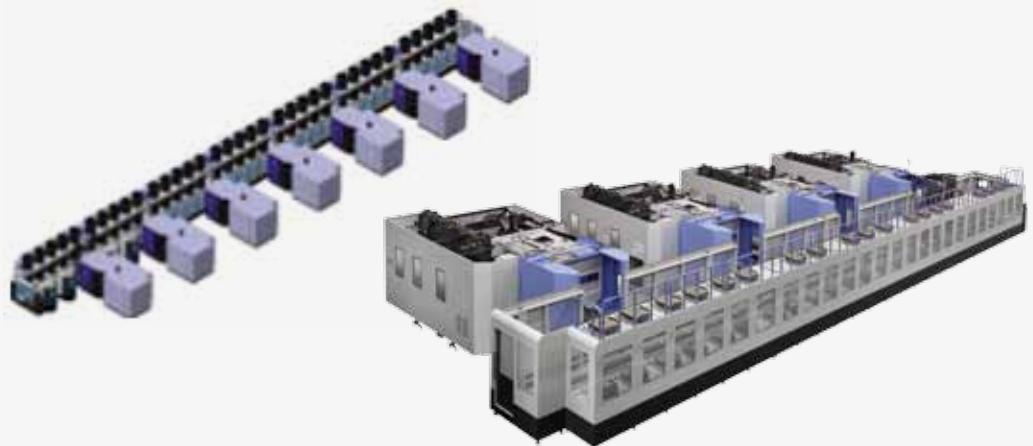
Pallet Extension System

Doosan's linear pallet system (LPS) and multipallet system (MPS) provides users with maximized productivity, rapid installation and commissioning, and easy maintainability.

Doosan Linear Pallet System [LPS II] option

Designed to provide users with an optimised system, the LPSII linear pallet systems designed and constructed by Doosan, offering outstanding flexibility, including system extension and layout change.

LPS II (Linear Pallet System)



| LPS II Model | LPS 500 II | LPS 630 II | LPS 800 II |
|-----------------------|---------------------------------------|--------------------------------------|----------------------------------------|
| Available Model | NHM 5000 | NHM 6300 | NHM 8000 |
| Forking type | Twin Fork type | | |
| No. of machines | 1 ~ 7 | | |
| No. of setup stations | 1 ~ 4 | | |
| No. of pallets | 12 ~ 70 | 10 ~ 70 | 8 ~ 70 |
| Dimensions (L x W) | 7824 x 2400 mm (308.0 X 94.5 inch) | 7904 x 785 mm (311.2 X 30.9 inch) | 8952 x 3500 mm (352.4 X 137.8 inch) |

Features

- Easy for system extension
- Sufficient workpiece space for high level of work efficiency
- Stable and efficient system operation
- Faster installation and commissioning
- Applicable to all HMC Series machines
- Excellent maintainability

LPS Standard Control Software

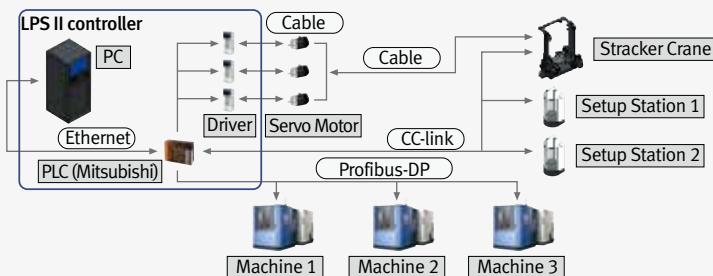
- Easily-storable basic information for flexible production.
- Platform management software for rapid production and changes in quantity.
- LPS management solution for fast and flexible production and sudden changes in quantity.

Doosan Production Management System [DPMS]



The DPMS is an operating system designed to ensure effective control and management of the LPS. The main window provides a solution that enables a flexible and rapid response to changes in output.

System Outline



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Doosan Multi-pallet Station [MPS] option

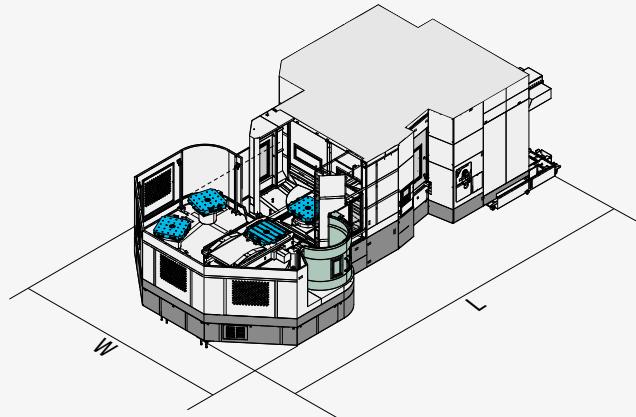
Compared with standard machines that use 2-pallet type APCs, the MPS can automatically handle 7 to 9 pallets for an extended period. This function enables small quantity batch production using machining scheduling.

Doosan Multi-pallet Station [DMPS]

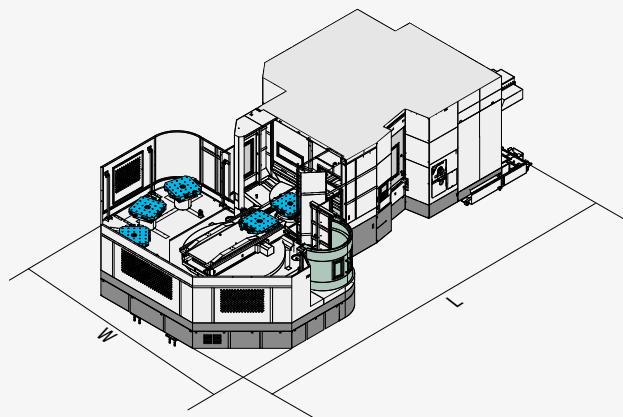
The DPMS is an operating system for effective control and management of the MPS. The functions of the DMPS include scheduled operation, data input, and setting change.



7 MPS



9 MPS



System Options

| | Unit | NHM 5000 | | NHM 6300 | | NHM 8000 | |
|---------------------|-----------|--------------|---------------|---------------|---------------|---------------|---------------|
| | | 7- MPS | 9 - MPS | 7- MPS | 9 - MPS | 7- MPS | 9 - MPS |
| No. of pallets | pcs. | 7 | 9 | 7 | 9 | 7 | 9 |
| Foot print (Length) | mm (inch) | 9490 (373.6) | 10140 (399.2) | 10560 (415.7) | 11000 (433.1) | 16010 (630.3) | 17150 (675.2) |
| Foot print (Width) | mm (inch) | 4220 (166.1) | 4430 (174.4) | 4780(188.2) | 5770 (227.2) | 5920 (233.1) | 6600 (259.8) |

* Chip conveyor and MPS foot board are excluded.

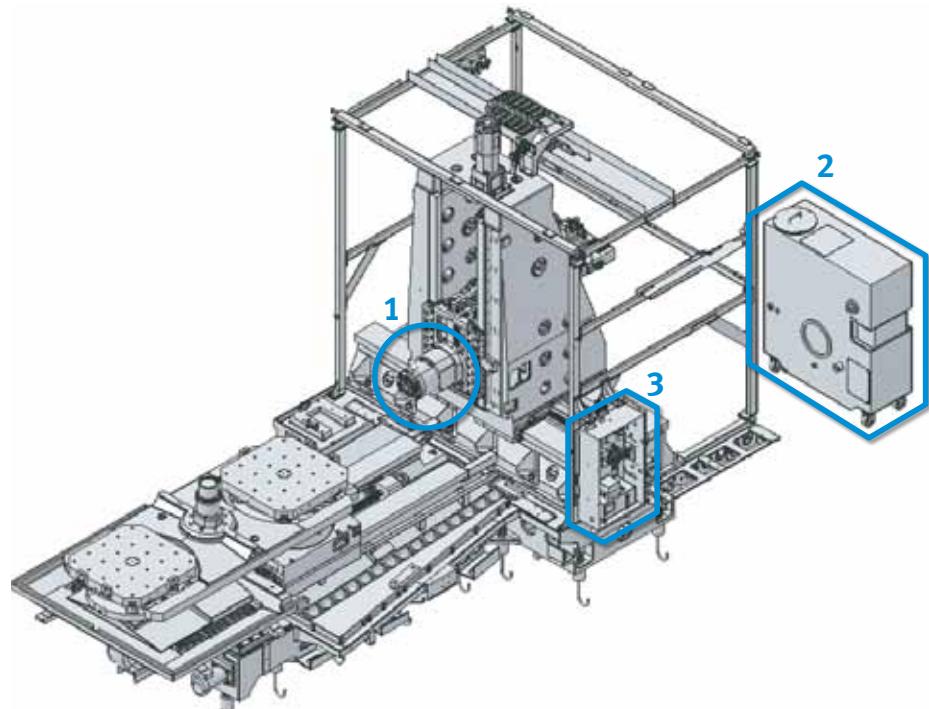


User Friendly

Ergonomic design guarantees users' convenience and safety.

User-oriented Design

Internal footings and an anti-door-lock function are provided to prevent the operator from being locked in the machine and to guarantee the operator's safety. The centralized service unit and screen panel enhance the operator's convenience.



1.
Flushing system to remove chips from the spindle top and slide cover.



2.
Coolant through spindle function for enhanced productivity option



3.
Centralized utility service unit
The utilities service unit is centralized for convenient maintainability.



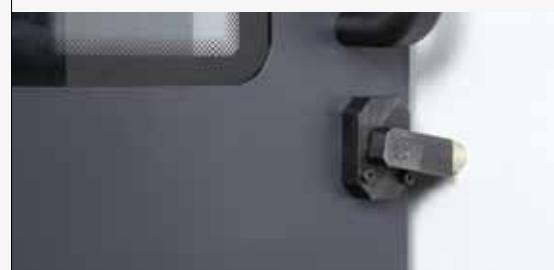
ATC screen panel provides easy tool data entry at the tool magazine area



Safety has been improved with machine internal footings



Anti-door lock device





User Convenience

User convenience has been significantly enhanced with a new operation panel.

Simple and Convenient Operation Panel

The operator's panel has been redesigned and integrated for better usability. Additional, customized function switches (option) can be provided to maximize the operator's convenience.



Clamping fixture lock/unlock button, counter, timer and other special optional buttons can be provided.

The buttons are separated by partitions in order to prevent erroneous operation of the buttons.

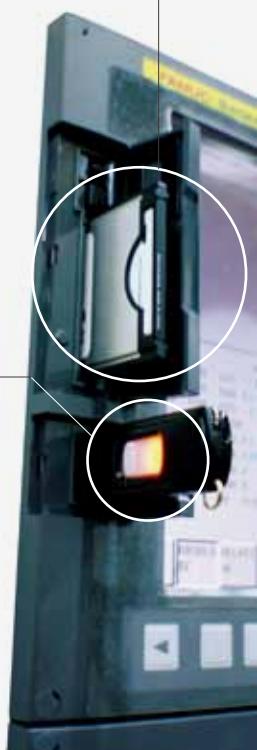
Swiveling Operating Panel



The operating panel can swivel by 90°, and displays various alarm messages concerning machine and controller error, enhancing the operator's convenience.

PCMCIA Card

The PCMCIA card enables uploading and downloading of the NC program, NC parameters, tool information, and ladder programs, and also supports DNC operation.



Portable MPG

The portable MPG allows the user to set up workpieces more easily.



USB Port

Upload/download of NC software programs, NC parameters, tool information and ladder program using a USB drive is allowed, but DNC operation is not supported.



EOP Function

Doosan's Easy Operation Package (EOP) supports the user with tool, help desk, operation, and pallet magazine functions among others.

Easy Operation Package

Doosan's EOP supports the user with tool, help desk, operation, and pallet magazine functions among others to maximize operational efficiency and user convenience.

Tool Support Functions



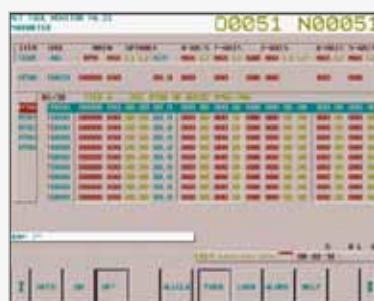
Tool management I

- Tool magazine control
- Tool state display
- Fastems Tool Add/Remove Function **option**



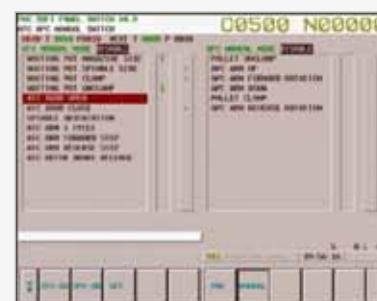
Tool management II **option**

- Tool magazine control
- Tool life management
- Tool life prediction
- Tool state control
- Balluff Tool ID function



Tool load monitor **option**

- Detection of tool damage
- Detection of abnormalities during operation
- Detection of no-load air cutting



ATC / APC panel

- ATC manual
- APC manual

Operation Support Functions



Operation rate

- Measure various machine operating rate
- Support 3 shift operation
- calculate and save 30 days operating rate
- Show data for a specific period



PMC switch

- Operation panel function (option)
- Substitutes toggle switches
- NC option software

Help Desk Functions

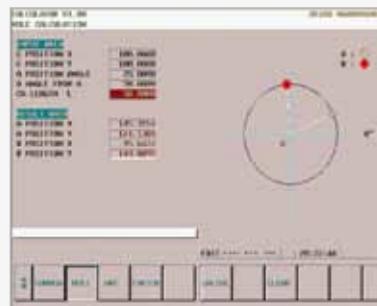
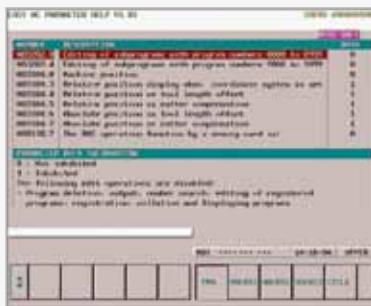
Basic Information

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Performance

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Customer Support Service

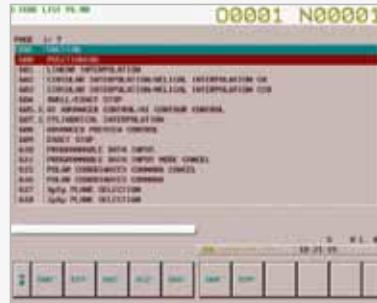
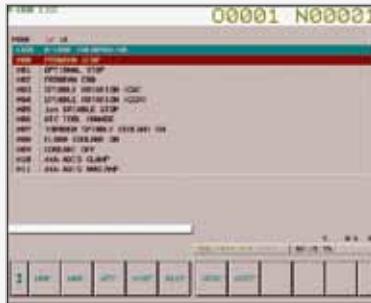


Easy NC parameter

- Help for major parameters
- Show parameter settings

Calculator

- Calculator function
- 4 arithmetical operations
- Supports mathematical functions



M CODE List

- List of major M codes

G CODE List

- List of major G codes

Pallet Magazine Support Functions



Multi-pallet station option

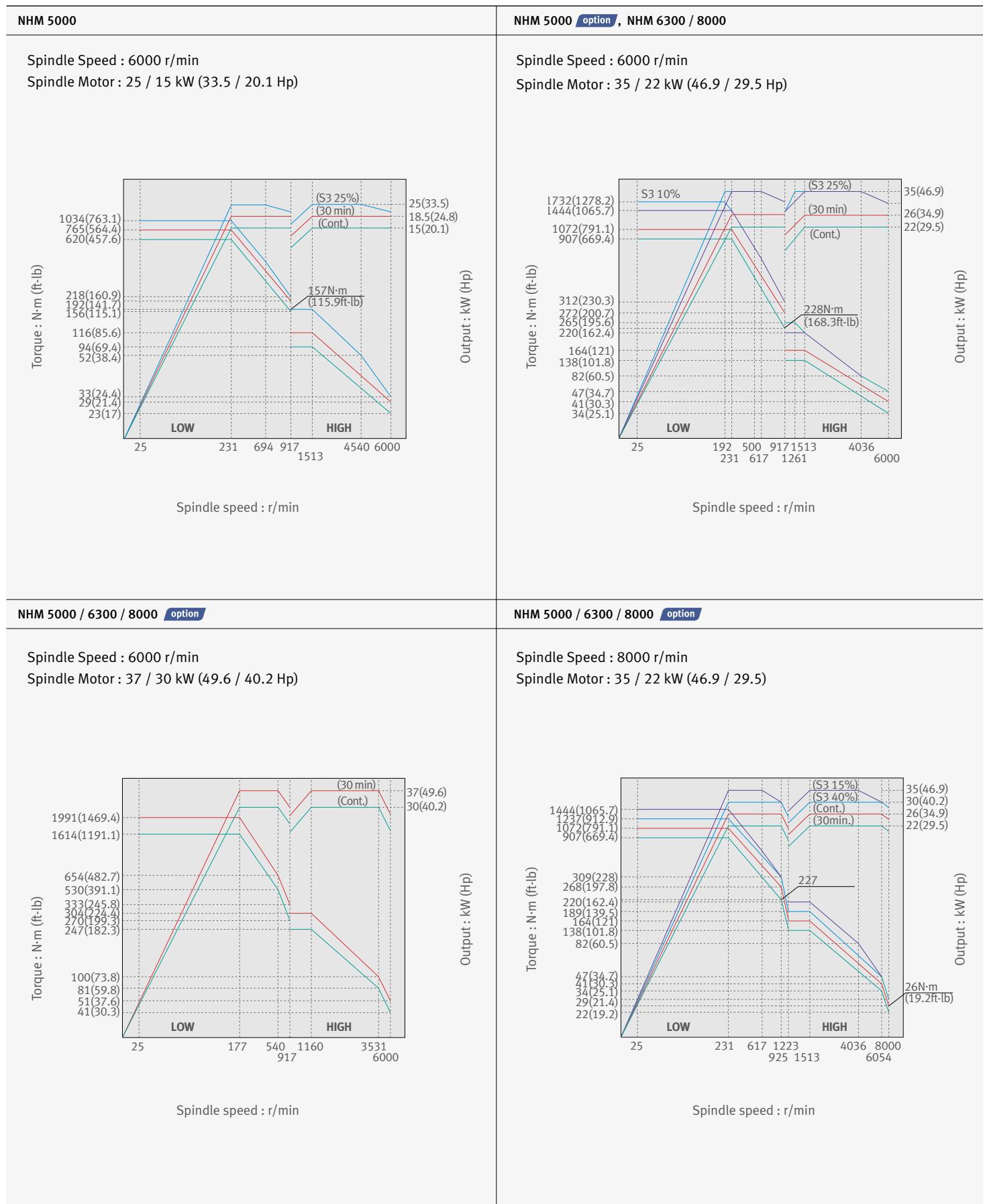
- Control MPS operation
- Display information on MPS PMG
- Set-up of machining schedule
- Auto Call function
- Manual operation and coordinate setting function

APC setting

- 2-pallet APC operation screen

Spindle Power – Torque Curve

NHM series



External Dimensions

NHM series

Unit : mm (inch)

Basic Information

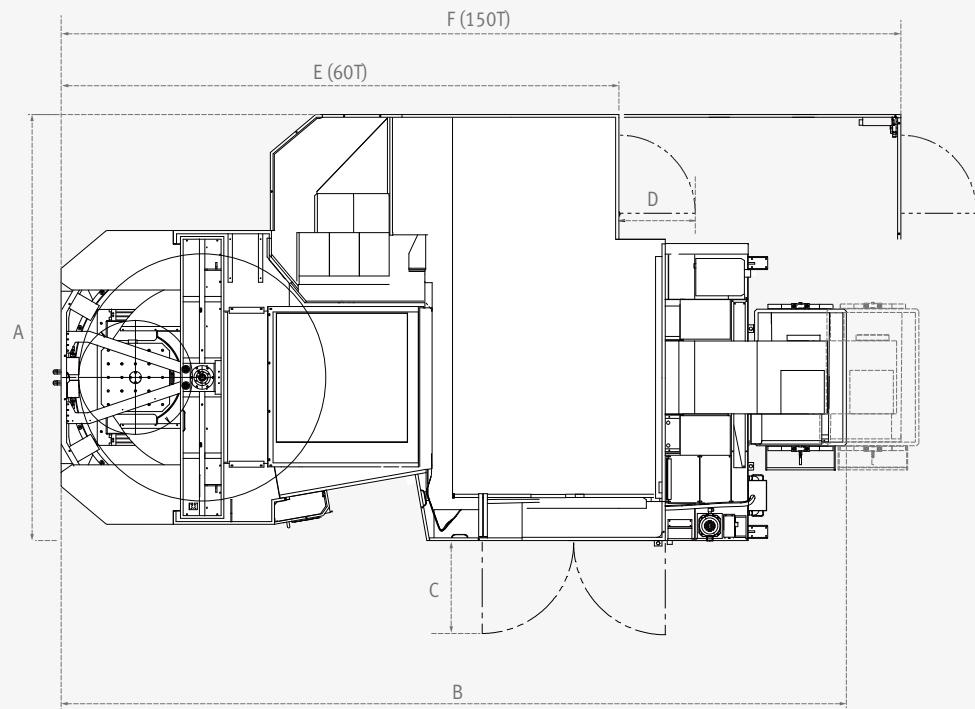
Basic Structure
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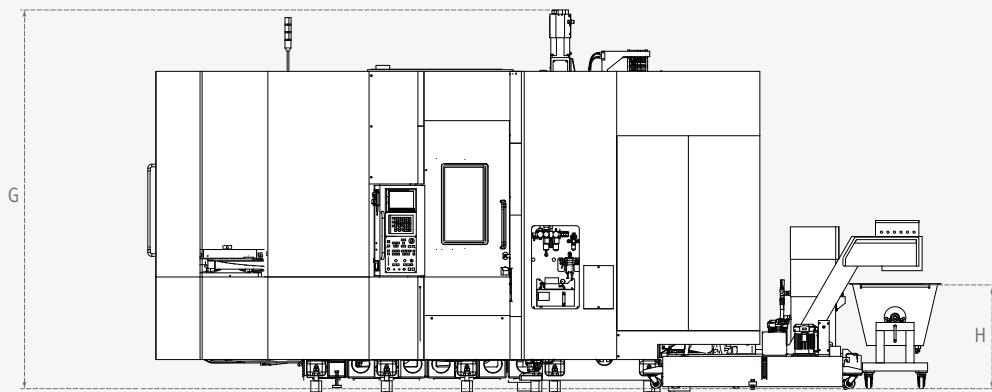
Options
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Top View



Side View



| Model | A | B | C | D | E | F | G | H |
|---------|--------------|--------------|------------|------------|--------------|--------------|--------------|-------------|
| NHM5000 | 3670 (144.5) | 6830 (268.9) | 660 (25.9) | 745 (29.3) | 4675 (184.1) | 7305 (287.6) | 3330 (131.1) | 1085 (42.7) |
| NHM6300 | 3930 (154.7) | 7300 (287.4) | 660 (25.9) | 745 (29.3) | 5145 (202.6) | 7745 (304.9) | 3495 (137.6) | 1085 (42.7) |
| NHM8000 | 4325 (170.3) | 8265 (325.4) | 660 (25.9) | 745 (29.3) | 6000 (236.2) | 8630 (39.8) | 3760 (148) | 1085 (42.7) |

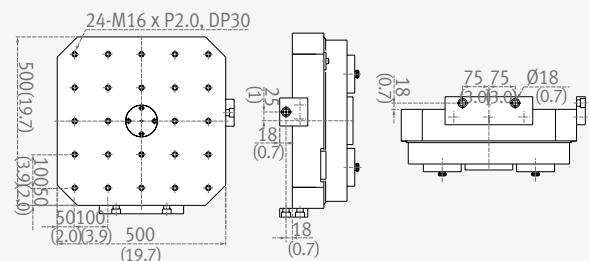
Table External Dimensions

NHM series

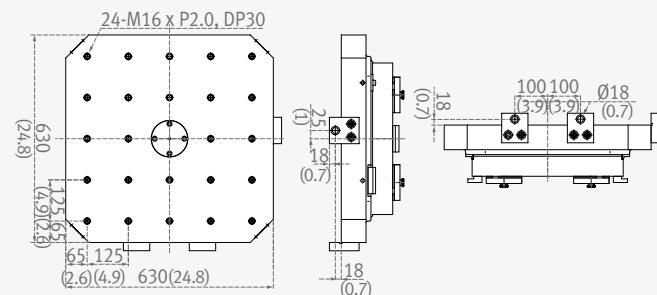
NHM 5000

Unit : mm (inch)

Standard Specifications (500×500(19.7x19.7))



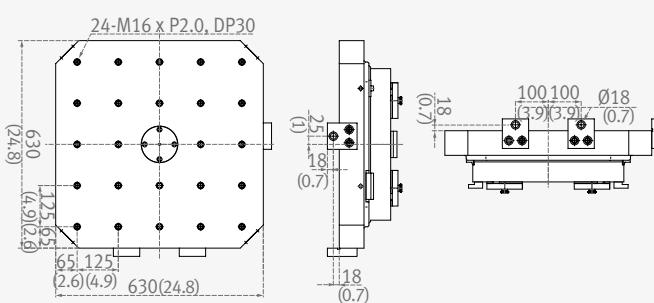
Optional Specifications (630×630(24.8x24.8))



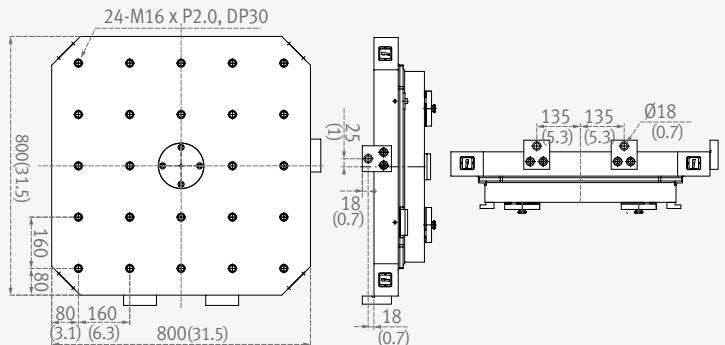
NHM 6300

Unit : mm (inch)

Standard Specifications (630×630(24.8x24.8))

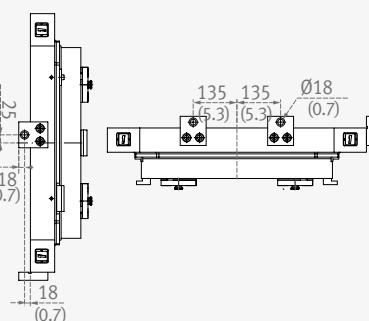
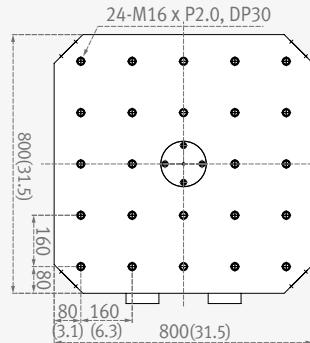


Optional Specifications (800×800(31.5x31.5))



NHM 8000

Unit : mm (inch)



Tool Shank

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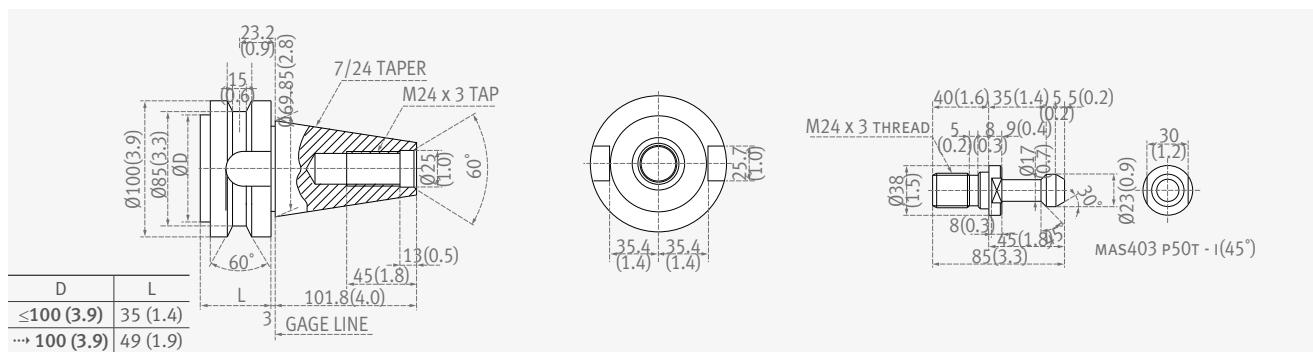
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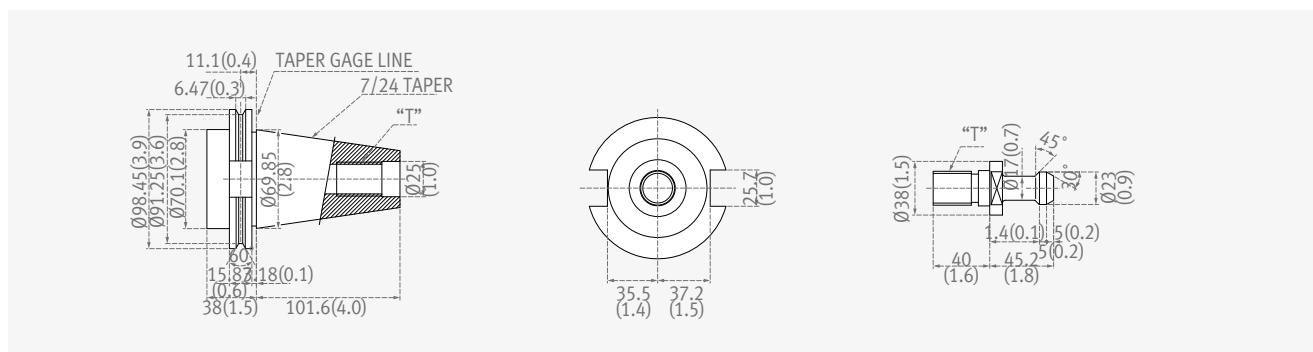
Customer Support
Service

NHM series

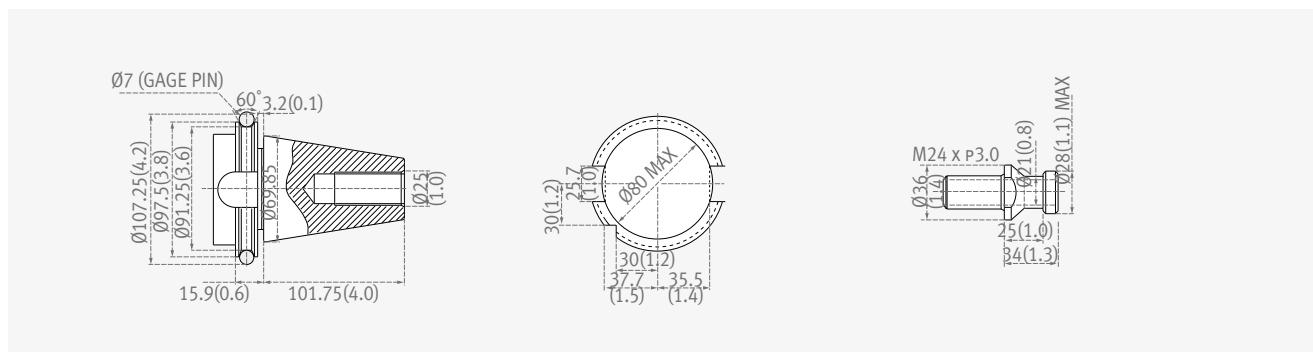
BT50



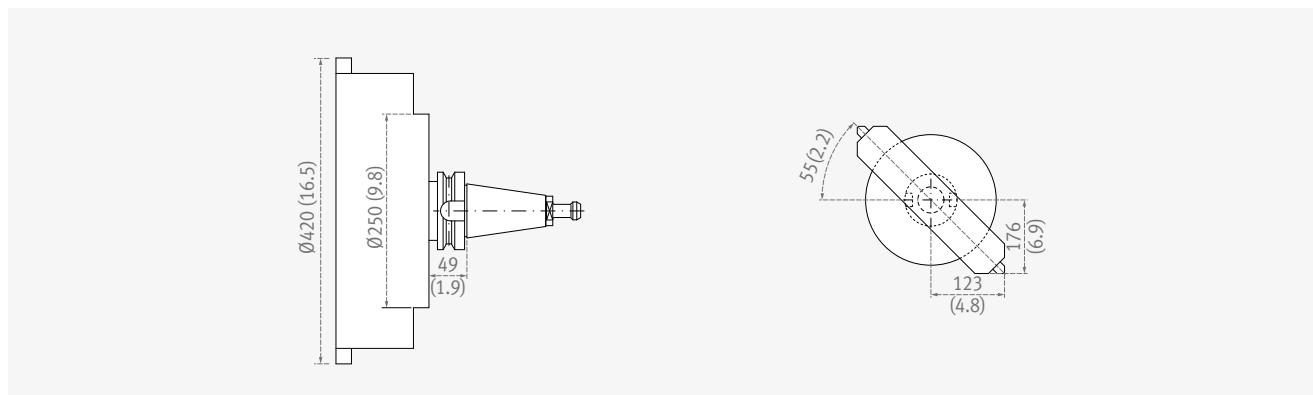
DIN50



CAT50



Boring bar Size

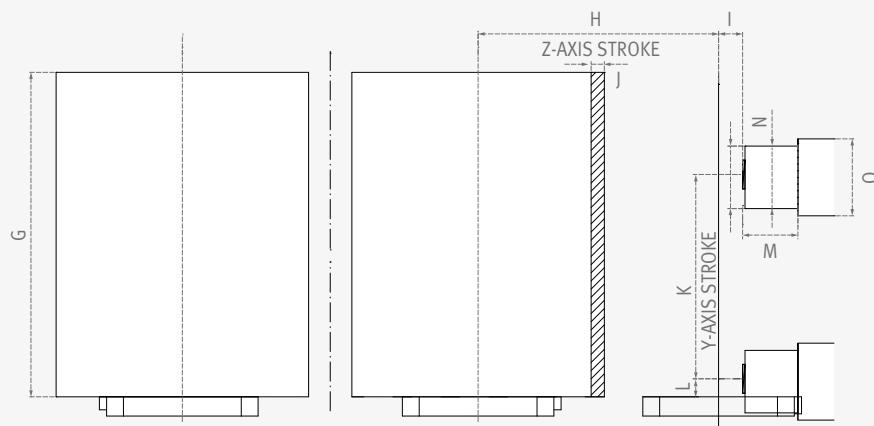
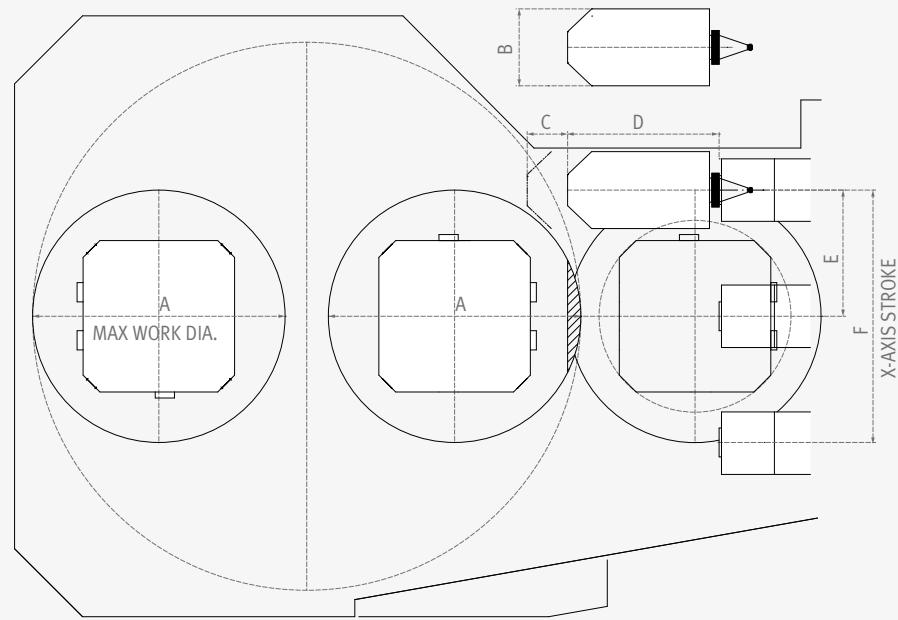


Workpiece working area

NHM series

Workpiece working area

Unit : mm (inch)



| Model | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|-----------------|-----------------|----------------|--------------|---------------|---------------|----------------|----------------|----------------|--------------|-------------|----------------|-------------|--------------|----------------|----------------|
| NHM 5000 | Ø850 (33.5) | Ø320 (12.6) | 168 (6.6) | 530 (20.9) | 400 (15.7) | 800 (31.5) | 1100 (43.3) | 850 (33.5) | 100 (3.9) | 5 (0.2) | 750 (29.5) | 75 (3.0) | 230 (9.1) | Ø260 (10.2) | Ø320 (12.6) |
| NHM 6300 | Ø1050 (41.3) | Ø320 (12.6) | 168 (6.6) | 630 (24.8) | 525 (20.7) | 1050 (41.3) | 1350 (53.1) | 1000 (39.4) | 100 (3.9) | 55 (2.2) | 900 (35.4) | 75 (3.0) | 230 (9.1) | Ø260 (10.2) | Ø320 (12.6) |
| NHM 8000 | Ø1450 (57.1) | Ø320 (12.6) | 168 (6.6) | 630 (24.8) | 700 (27.6) | 1400 (55.1) | 1550 (61.0) | 1370 (53.9) | 150 (5.9) | 5 (0.2) | 1200 (47.2) | 75 (3.0) | 230 (9.1) | Ø260 (10.2) | Ø320 (12.6) |

Machine Specifications

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| Description | | | Unit | NHM 5000 | NHM 6300 | NHM 8000 | |
|--------------------------------------------|------------------------------------------------------------------------|--------------------|---------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------|----------------------------------------------|--|
| Cutting Capacity | Travel distance | X-axis | mm (inch) | 800 (31.5) | 1050 (41.3) | 1400 (55.1) | |
| | | Y-axis | mm (inch) | 700 (27.6) | 850 (33.5) | 1050 (41.3) | |
| | | Z-axis | mm (inch) | 850 (33.5) | 1000 (39.4) | 1200 (47.2) | |
| Distance from spindle nose to table center | | | mm (inch) | 100 ~ 950 (3.9 ~ 37.4) | 100 ~ 1100 (3.9 ~ 43.3) | 150 ~ 1350 (5.9 ~ 53.1) | |
| Distance from spindle center to table top | | | mm (inch) | 75 ~ 775 (2.9 ~ 30.5) | 75 ~ 925 (2.9 ~ 36.4) | 75 ~ 1125 (2.9 ~ 44.3) | |
| Feed Rate | Rapid feed rate | X-axis | m/min | 30 (1181.1) | | 24 (944.9) | |
| | | Y-axis | m/min | 30 (1181.1) | | 24 (944.9) | |
| | | Z-axis | m/min | 30 (1181.1) | | 24 (944.9) | |
| | Cutting feed rate | | mm/min | 15000 (590.5) | | 12000 (472.4) | |
| Pallet | Pallet type | | 24-M16 x P2.0 | | | | |
| | Pallet indexing angle | | deg | 1 {0.001}* | | | |
| | Max. loading capacity | | kg (lb) | 800 (1763.7) | 1200 (2645.5) | 2000 (4409.2) | |
| | Max. workpiece size | | mm (inch) | Ø 850 x 1100 (Ø 33.5 / 43.3) | Ø 1050 x 1350 (Ø 41.3 / 53.1) | Ø 1450 x 1550 (Ø 57.1 / 61) | |
| | Pallet size | | mm (inch) | 500 x 500 (19.7 x 19.7) | 630 x 630 (24.8 x 24.8) | 800 x 800 (31.5 x 31.5) | |
| Spindle | Max spindle speed | | r/min | 6000 {8000}* | | | |
| | Taper specifications | | | ISO #50, 7/24 TAPER | | | |
| | Max. torque | | N·m (ft-lb) | 1034 {1444}* (368.8 {1065}*) | 1732 {1444}* (1277.5 {1065}*) | | |
| Auto Pallet Changer (APC) | No. of pallets | | ea | 2 | | | |
| | Pallet change time | | s | 8.5 | 12 | 16 | |
| | APC indexing angle (rotation) | | deg | 90 | | | |
| Automatic Tool Changer (ATC) | Tool shank type | | BT50 {CAT50 / DIN50 / HSK-A100}* 60 {90 / 120 / 150} | | | | |
| | Tool storage capacity | Chain type | ea | 196 / 256 / 316 / 376* | | | |
| | | Matrix type | ea | {196 / 256 / 316 / 376}* 1732 {1444}* (1277.5 {1065}*) | | | |
| | Max. tool diameter | W/O adjacent tool | mm (inch) | 320 (12.6) | | | |
| | | With adjacent tool | mm (inch) | 130 (5.1) | | | |
| | Max. tool length | | mm (inch) | 530 (20.8) (BT / CAT / DIN), 600 (HSK) | 630 (24.8) (BT / CAT / DIN), 700 (HSK) | 630 (24.8) (BT / CAT / DIN), 700 (HSK) | |
| | Max. tool weight | | kg (lb) | 30 (66) | | | |
| | Tool change time (tool to tool, tools weighing less than 12kg(26.5lb)) | | s | 2 | | | |
| | Tool change time (chip-to-chip, tools weighing less than 12kg(26.5lb)) | | s | 7 | 7.5 | 8.5 | |
| | Motor | | Spindle motor power | 25 / 15 {35 / 22} (33.5 / 20.1 {46.9 / 29.5}*) | 35 / 22 (46.9 / 29.5) | | |
| Power Source | Power consumption | | kVA | 60 | 70 | | |
| | Compressed air pressure | | Mpa (psi) | 0.54 (78.3) | | | |
| Tank Capacity | Coolant tank capacity | | L (g) | 825 (217.9) | 925 (244.4) | | |
| | Lubricant tank capacity | | L (g) | 7.2 (1.9) | | | |
| Machine Dimensions | Height | | mm (inch) | 3330 (131.1) | 3495 (137.6) | 3760 (148) | |
| | Length | | mm (inch) | 6075 (239.2) | 6522 (256.8) | 7380 (290.6) | |
| | Width | | mm (inch) | 3670 (144.5) | 3930 (154.7) | 4325 (170.3) | |
| | Weight | | kg (lb) | 18500 (40785.5) | 20500 (45194.8) | 25500 (56217.9) | |

* { } : Option

NC Unit Specifications

**FANUC
31i**

| Item | Spec. | FANUC 31i | ● Standard ○ Optional X N/A |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------|
| AXES CONTROL | | | |
| Controlled axes | 4 (X,Y,Z,B) | X, Y, Z, B | ● |
| Additional controlled axes | ADD 1 AXIS (5TH AXIS) | ○ | ○ |
| Simultaneously controlled axes | Positioning(G00)/Linear interpolation(G01) : 3 axes Circular interpolation(G02, G03) : 2 axes | ● | ● |
| Least command increment | 0.001 mm / 0.0001" | ● | ● |
| Least input increment | 0.001 mm / 0.0001" | ● | ● |
| Increment system C | IS-C | ○ | ○ |
| Interpolation type pitch error compensation | | ○ | ○ |
| Position switch | | ○ | ○ |
| Inverse time feed | | ○ | ○ |
| Cylindrical interpolation | G07.1 | ○ | ○ |
| NURBS interpolation | | ○ | ○ |
| Bell-type acceleration/deceleration before look ahead interpolation | Included in AI contour control I or II (Oi-MF, 31/32) | ● | ● |
| Rigid tapping bell-shaped acceleration/deceleration | Rigid tapping is required. | ○ | ○ |
| Exponential interpolation | | ○ | ○ |
| Involute interpolation | | ○ | ○ |
| Smooth backlash compensation | | ● | ● |
| Automatic corner override | G62 | ○ | ○ |
| Automatic corner deceleration | Included in AI contour control I or II (Oi-MF, 31/32) | ● | ● |
| Cutting feedrate clamp | | ● | ● |
| Rapid traverse bell-shaped acceleration/deceleration | | ● | ● |
| Handle interruption | | ○ | ○ |
| Manual handle retrace | | ○ | ○ |
| Manual handle feed 2/3 unit | | ○ | ○ |
| Nano smoothing | | ○ | ○ |
| AICC II | 200BLOCK | ● | ● |
| AICC II | 400 BLOCK | ○ | ○ |
| High-speed processing | 600 BLOCK | ○ | ○ |
| Look-ahead blocks expansion | 1000 BLOCK | ○ | ○ |
| Linear ACC/DEC before cutting feed interpolation | | ● | ● |
| SPINDLE & M-CODE FUNCTION | | | |
| M-code function | M 3 digits | ● | ● |
| Spindle orientation | | ● | ● |
| Retraction for rigid tapping | | ● | ● |
| Rigid tapping | G84, G74 | ● | ● |
| TOOL FUNCTION | | | |
| Number of tool offsets | 200-pairs | ● | ● |
| Number of tool offsets | 400-pairs | ○ | ○ |
| Number of tool offsets | 499 / 999 / 2000 -pairs | ○ | ○ |
| Tool nose radius compensation | G40, G41, G42 | ● | ● |
| Tool length compensation | G43, G44, G49 | ● | ● |
| Tool life management | | ● | ● |
| Addition of tool pairs for tool life management | | ○ | ○ |
| Tool number command | T3 digits | ● | ● |
| Tool offset memory C | Geometry / Wear and Length / Radius offset memory | ● | ● |
| Tool length measurement | | ● | ● |
| Tool length offset | | ● | ● |
| Tool offset | G45 - G48 | ○ | ○ |
| Rotary table dynamic fixture offset | | ○ | ○ |
| Work setting error compensation | | ○ | ○ |
| PROGRAMMING & EDITING FUNCTION | | | |
| Absolute / Incremental programming | G90 / G91 | ● | ● |
| Automatic Coordinate system setting | | ● | ● |
| Background editing | | ● | ● |
| Canned cycle | G73, G74, G76, G80 - G89, G99 | ● | ● |
| Circular interpolation by radius programming | | ● | ● |
| Custom macro | | ● | ● |
| Addition of custom macro common variables | #100 - #199, #500 - #999 | ● | ● |
| Macro executor | | ● | ● |
| Custom software | 2MB | - | - |
| Custom software | 4MB, 6MB | - | - |
| Custom software | 8MB | ● | ● |
| Custom software | 12MB, 16MB | ○ | ○ |
| OTHERS FUNCTIONS (Operation, setting & Display, etc) | | | |
| Embeded Ethernet | | ● | ● |
| MDI / DISPLAY unit | 8.4" Color LCD, keyboard for data input(small), soft-keys | - | - |
| MDI / DISPLAY unit | 10.4" Color LCD, Keyboard for data input, soft-keys | ● | ● |
| MDI / DISPLAY unit | 15" Color LCD, Keyboard for data input, soft-keys | ○ | ○ |
| I/O interface | RS - 232C | ● | ● |
| USB memory interface | Only Data Read & Write | ● | ● |
| Stored stroke check 2 | | ○ | ○ |
| Multi language display | | ● | ● |
| 3rd / 4th reference return | | ○ | ○ |
| Cs contouring control | | ○ | ○ |
| Reader/Puncher interface (for 2ch) | | ● | ● |
| Multi spindle control | | - | - |
| Retraction for 3-dimensional rigid tapping | | ○ | ○ |
| Extended Spindle orientation (Spindle Multi Orientation) | | ● | ● |
| Chopping function | G81.1 | ○ | ○ |
| High speed skip function | | ○ | ○ |
| Polar coordinate command | G15 / G16 | ○ | ○ |
| Polar coordinate interpolation | G12.1 / G13.1 | ○ | ○ |
| Programmable mirror image | G50.1 / G51.1 | ○ | ○ |
| Scaling | G50, G51 | ○ | ○ |
| Single direction positioning | G60 | ○ | ○ |
| Pattern data input | | ○ | ○ |
| Jerk control | AI contour control II is required. | ○ | ○ |
| Fast Data server with 1GB PCMCIA card | | ○ | ○ |
| Fast Ethernet | | ○ | ○ |
| 3-dimensional coordinate conversion | | ○ | ○ |
| 3-dimensional tool compensation | | ○ | ○ |
| 3-dimensional manual feed | | ○ | ○ |
| Tape format for FS15 | | ○ | ○ |
| Tape format for FS10/11 | | - | - |
| Figure copying | G72.1, G72.2 | ○ | ○ |
| Machining time stamp function | | ○ | ○ |
| Machining quality level adjustment | | ○ | ○ |
| EZ Guide I with 10.4" Color TFT | -Doosan Infracore Conversational Programming Solution -When the EZ Guide I is used, the Dynamic graphic display cannot application | ○ | ○ |
| Dynamic graphic display (with 10.4" Color TFT LCD) | -Machining profile drawing. -When the EZ Guide I is used, the Dynamic graphic display cannot application | ○ | ○ |

Responding to Customers Anytime, Anywhere



Global Service Support Network

Corporations

5

Dealer Networks

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Technical Centers

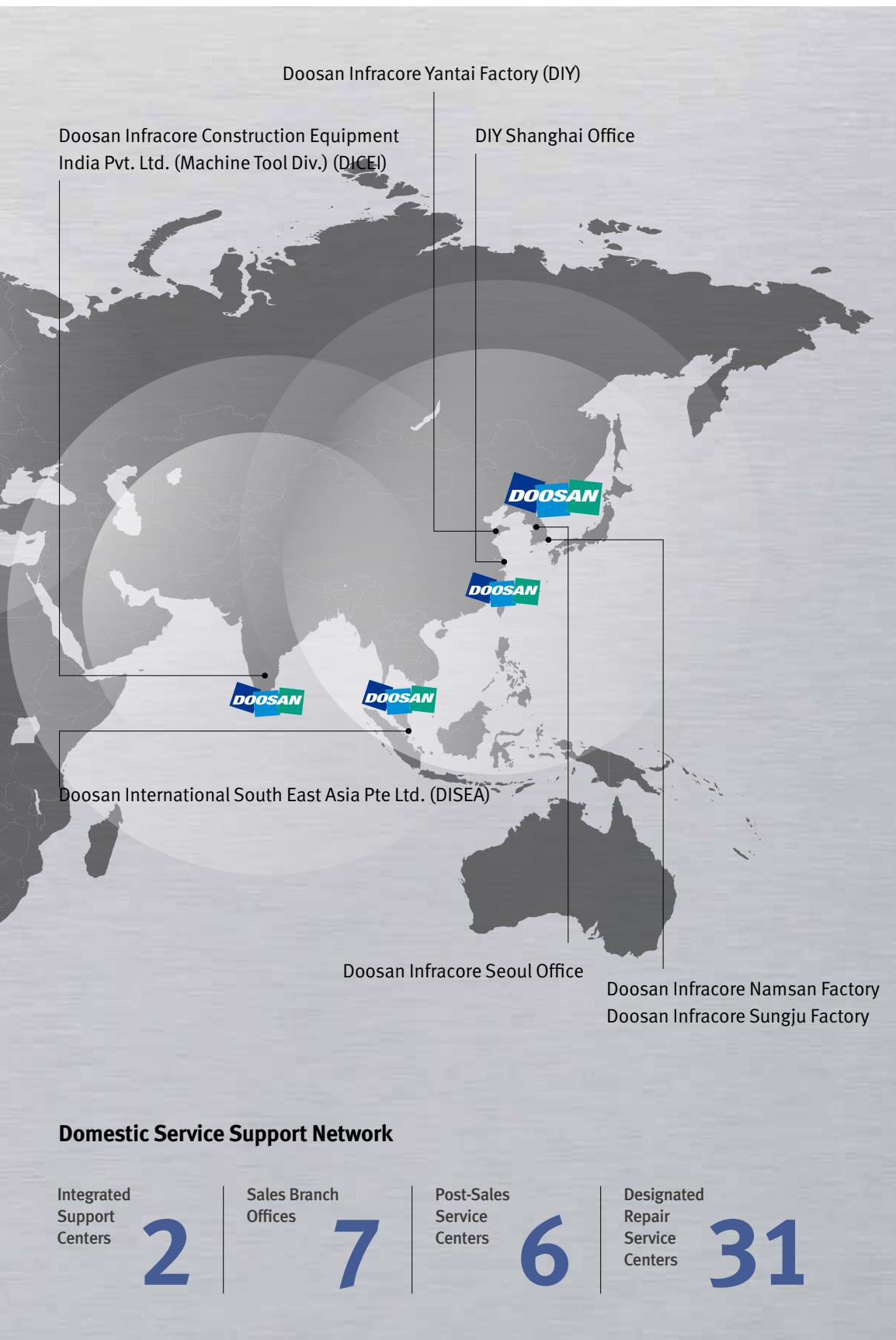
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Factories

3

Doosan Machine Tools' Global Network, Responding to Customer's Needs nearby, Anytime, Anywhere

Doosan machine tools provides a system-based professional support service before and after the machine tool sale by responding quickly and efficiently to customers' demands. By supplying spare parts, product training, field service and technical support, we can provide top class support to our customers around the world.



Customer Support Service

We help customers to achieve success by providing a variety of professional services from pre-sales consultancy to post-sales support.

Supplying Parts



- Supplying a wide range of original Doosan spare parts
- Parts repair service

Field Services



- On site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair

Technical Support



- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy

Training



- Programming / machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering

Main Specifications

NHM series



| Description | Unit | NHM 5000 | NHM 6300 | NHM 8000 |
|-----------------------------|-----------|-----------------------------------------|-------------------------------------------|--------------------------------------------|
| Pallet size | mm (inch) | 500 x 500 (19.7 x 19.7) | 630 x 630 (24.8 x 24.8) | 800 x 800 (31.5 x 31.5) |
| Tool taper | taper | 50 | 50 | 50 |
| Max. spindle speed | r/min | 6000 | 6000 | 6000 |
| Max. spindle motor power | kW (Hp) | 25 (33.5) | 35 (46.9) | 35 (46.9) |
| Travel distance (X / Y / Z) | mm (inch) | 800 / 700 / 850 (31.5 / 27.6 / 33.5) | 1050 / 850 / 1000 (41.3 / 33.5 / 33.4) | 1400 / 1050 / 1200 (55.1 / 41.3 / 47.2) |
| Tool storage capacity | ea | 60 | 60 | 60 |
| NC system | - | FANUC / SIEMENS | FANUC / SIEMENS | FANUC / SIEMENS |



Doosan Machine Tools

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* The specifications and information above-mentioned may be changed without prior notice.